

#### ABSTRACT OF THE DISCLOSURE

An illumination apparatus for a microscope and an image processing apparatus using the illumination apparatus include a light source, a semi-transmissive mirror splitting a light beam from the light source into two beams of the first and second irradiation light, two excitation filters selecting the wavelengths of the first and second irradiation light, a semi-transmissive mirror synthesizing individual beams of the first and second irradiation light whose wavelengths are selected, into a single beam, a dichroic mirror directing a light beam synthesized by the semi-transmissive mirror toward a specimen and transmitting light from the specimen, an objective lens, cameras imaging fluorescent light from the specimen after being separated into fluorescent light excited by the first and second wavelengths, and an image processing section processing fluorescent images formed by imaging elements.